

# The ATLAS Level-1 Central Trigger

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The ATLAS Level-1 Central Trigger consists of the Muon-to-Central-Trigger-Processor Interface (MUCTPI), the Central Trigger Processor (CTP), and the Timing, Trigger and Control (TTC) partitions of the sub-detectors. The MUCTPI connects the output of the muon trigger system to the CTP. At every bunch crossing it receives information on muon candidates from each of the 208 muon trigger sectors and calculates the total multiplicity for each of six pT thresholds. The CTP combines information from calorimeter and the MUCTPI and makes the final Level-1 Accept (L1A) decision on the basis of lists of selection criteria (trigger menus). The MUCTPI and the CTP provide trigger summary information to the data acquisition system (DAQ) and the Level-2 trigger for every event selected at the Level-1. They further provide accumulated and, for the CTP, bunch-by-bunch scaler data for monitoring of the trigger, detector and beam conditions. The TTC partitions send timing, trigger and control signals from the CTP to the sub-detectors and receive busy signals which can throttle the generation of L1As. The Local Trigger Processors (LTPs) normally receive the TTC signals from the CTP but can also generate them locally. The LTP interface (LTPIF) modules allow to connect several LTPs for combined local running.

The MUCTPI, the CTP and most of the TTC partitions of the ATLAS sub-detectors have been installed in the ATLAS experiment and are being used for commissioning tests with the trigger processors on the input and several sub-detectors as well as DAQ and Level-2 trigger on the output. Results of operating the Central Trigger in the experiment using trigger information from trigger processors connected to sub-detectors observing cosmic rays will be shown.

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